

## Say What?

### Defining and Understanding Key Outcomes and Measures Related to Births and Pregnancies

Consider the following headlines: *In 2006 there were more than 430,000 teen births in the U.S.<sup>1</sup> In 2004 there were 729,000 teen pregnancies in America.<sup>2</sup> In 2006, the teen birth rate was 41.9.<sup>1</sup> There was a 32% decrease in the teen birth rate from 1991 to 2006.<sup>1</sup>*

What do all these numbers mean? How do they differ? Can they be compared? This *Science Says* presents definitions, examples, and step-by-step guidance on how to interpret rates, proportions, and the percent change in numbers over time. Consistent definitions of key terms and concepts related to teen and unplanned pregnancy will help when interpreting available data, and will help ensure a better understanding of commonly used terms and statistics.

#### Pregnancy and Birth Outcomes of Interest

**Teen Pregnancy:** A pregnancy can result in a birth, an abortion or a miscarriage. The National Campaign typically reports teen pregnancy statistics for girls age 15–19.

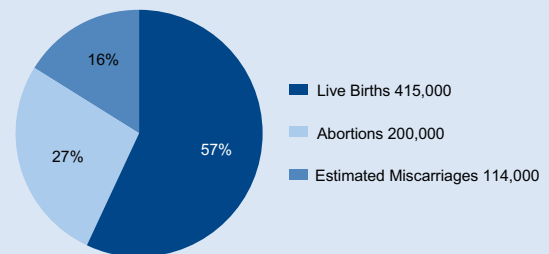
Figure 1 shows the distribution of teen pregnancies in 2004 by pregnancy outcome—that is, the proportion of pregnancies that resulted in a birth, in an abortion or in a miscarriage. Of the 729,000 teen pregnancies in 2004, 57% (415,000) of pregnancies resulted in a live birth.<sup>2</sup>

Teen pregnancy statistics reported by The National

Campaign are derived from published sources. These sources—usually the National Center for Health Statistics (NCHS) and/or the Guttmacher Institute—calculate teen pregnancy information using data from: the National Survey of Family Growth (NSFG); abortion surveillance information reported by states to the Center for Disease Control and Prevention’s (CDC) National Center for Chronic Disease Prevention and Health Promotion; a national survey of abortion providers conducted by the Guttmacher Institute; and birth certificates.<sup>2</sup>

**Teen Births:** As noted above, teen births are one possible outcome of teen pregnancy and the outcome for which there is the most reliable data. In general, The National Campaign reports teen birth statistics for girls age 15–19. Births to younger teens (under age 15) are sometimes included in reports. Statistics including both 15–19 year-olds and younger teens are labeled more generally as “births to women under age 20.” Teen birth

**FIGURE 1.** Pregnancy Outcomes for Teen Girls Aged 15–19, 2004



statistics are reported in various ways including: the number of births, birth rates, and percent of births to teens. Birth certificates are the primary source of information on teen births. Data derived from the birth certificates are reported by NCHS in cooperation with state vital records offices. Birth data for teens are available at the national, state, and county level (for counties over 100,000 residents), and for U.S. territories. State-level birth statistics, as reported by NCHS, refer to the mother's state of residence, rather than the state in which she gave birth.

**Unplanned Pregnancy and the Births that Follow:** In addition to the age at which a woman becomes pregnant or gives birth, it is important to know whether a woman was planning to become pregnant at the time of conception. The National Campaign defines unplanned pregnancies as those pregnancies reported by women to be unintended. Unintended pregnancies include both pregnancies that are mistimed and those that are unwanted. *Mistimed pregnancies* are defined as pregnancies that the mother reports occurred sooner than desired.<sup>3</sup> Some surveys, such as the NSFG, also ask about the extent of mistiming (i.e. how many years too soon?). *Unwanted pregnancies* are defined as pregnancies that the mother reports were not wanted at the time of conception or at any time in the future.<sup>3</sup> In general, pregnancies ending in abortion are classified as unintended.<sup>a</sup>

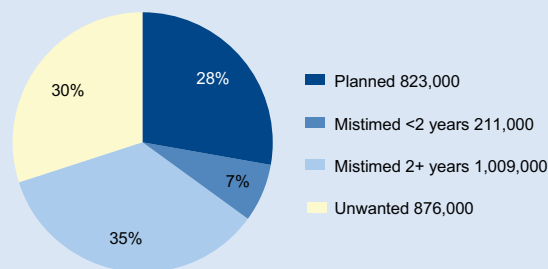
In 2001, 2.9 million pregnancies occurred to unmarried women age 15–44. Of these, 7% were mistimed by less than two years, 35% were mistimed by two years or more, and 30% were unwanted. Therefore, a total of 72% of pregnancies to unmarried women were unplanned (Figure 2).<sup>4,5</sup>

In addition to the proportion of pregnancies that are planned versus unplanned, other commonly reported statistics include the number and rate of unplanned pregnancy.

The primary sources of information on unplanned pregnancy include the NSFG<sup>6</sup>, birth certificate information<sup>7</sup>, a national survey of abortion providers conducted by the Guttmacher Institute<sup>8</sup>, a nationally representative survey of abortion patients<sup>9</sup>, and abortion surveillance information reported by states to CDC's National Center for Chronic Disease and Health Promotion.<sup>10</sup> The questions used to measure unplanned pregnancy are designed to capture a woman's intention to become pregnant at the time of conception<sup>3</sup> and are asked retrospectively—that is, after the pregnancy occurred as well as after the resulting birth, abortion or miscarriage. The limitations of these data are clear: a woman's perception of her initial intentions might change over time depending on her pregnancy experi-

*a Note that pregnancies ending in abortion are also assumed to have resulted from unwanted pregnancies unless otherwise noted.<sup>6</sup>*

**FIGURE 2.** Pregnancies by Intention Among Unmarried Women Age 15–44, 2001



ence and the outcome of the pregnancy. Consequently, the retrospective report might not always reflect actual intentions prior to pregnancy.<sup>6</sup>

**Nonmarital Births:** Another frequently cited outcome is whether a woman was married or not when she gave birth. Reports focus primarily on the proportion of all births that are to unmarried women, the birth rate among unmarried women, and the number of births to unmarried women. Some may mistakenly conflate non-marital births and teen births however, they are not the same. For example, in 2006 the majority of teens giving birth were unmarried (84%) yet births to unmarried teens made up a small share of births to unmarried women overall (22%).<sup>1</sup>

**Subsequent Births and Pregnancies:** Subsequent births are those births that occur after a first birth (sometimes called 2<sup>nd</sup> or higher order births). Similarly, subsequent pregnancies are those pregnancies that occur after a first pregnancy.

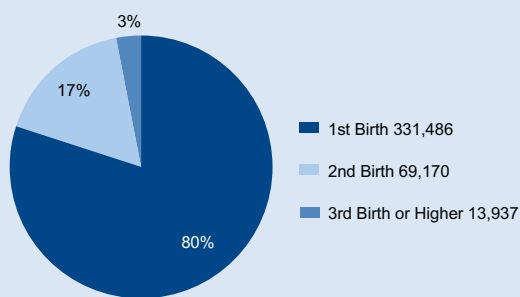
For example, a subsequent *teen* birth is any additional birth that occurs to a mother younger than 20. Subsequent teen births are also called “repeat teen births”, and like teen births more generally they can be reported in terms of numbers, rates, and proportions. Figure 3 illustrates that in 2005, the majority of teen births were first births and approximately 20% of all teen births were subsequent teen births.<sup>11</sup>

### Ways to Measure Pregnancy and Births

This section illustrates the definitions of some common pregnancy and birth statistics, such as numbers, rates and proportions, as well as how to compare statistics either across different groups or over time. To start, let's clarify the difference between numbers, rates and proportions.

- A **number** is a basic count of a population or event. The annual number of teen births is simply the total number of live births to teen girls (typically age 15–19) each year. It

**FIGURE 3.** Percent of Teen Births that are Subsequent Births, 2005



provides one indication of overall magnitude. For example, in 2005, there were 414,593 births to teens age 15–19.<sup>11</sup>

- A **rate** expresses the frequency of an event within a defined population during a specific period of time.<sup>12</sup> For example, there were 40.5 births per 1,000 teen girls age 15–19 in 2005.<sup>11</sup> Rates offer an indication of how likely an event is to occur and rates for health events are generally measured using 1,000 as the denominator.
- A **proportion** expresses the size of a particular outcome or population as it relates to a larger whole.<sup>12</sup> For example, the proportion of all teen births that were to Hispanic teen girls in 2005 was 0.39, or roughly four in ten.<sup>11</sup> Proportions are used to describe the characteristics of a population or event.

More detailed examples of rates and proportions are provided below:

- **Rate Example:** The 2005 teen birth rate (age 15–19) is calculated by first taking the number of births to teen girls age 15–19 in 2005 (414,593) and dividing by the population of teen girls aged 15–19 in 2005 (10,248,766):

$$\frac{414,593}{10,248,766} = 0.04045$$

Because birth rates (like most population rates) are expressed as a rate per 1,000 women, this result is then multiplied by 1,000.

$$0.04045 * 1,000 = 40.45$$

► In 2005 the teen birth rate for teen girls age 15–19 was 40.5 per 1,000.<sup>11</sup>

- **Proportion Example:** The proportion of all teen births in 2005 that were to non-Hispanic white teen girls is calculated

by taking the total number of births to non-Hispanic white teen girls age 15–19 (165,005) and dividing by the total number of births to all teen girls age 15–19 (414,593):

$$\frac{165,005}{414,593} = 0.40$$

► The proportion of all teen births that are to non-Hispanic white teen girls is 0.40, or four in ten. This number can also be multiplied by 100 and expressed as a percentage—that is, 40% of all teen births are to non-Hispanic white teen girls.<sup>11</sup>

### Comparing Statistics Over Time or Across Populations:

Comparing rates and proportions across groups or over time is usually more informative than comparing absolute numbers because rates and proportions are measured relative to the population, whereas numbers are not (see below):

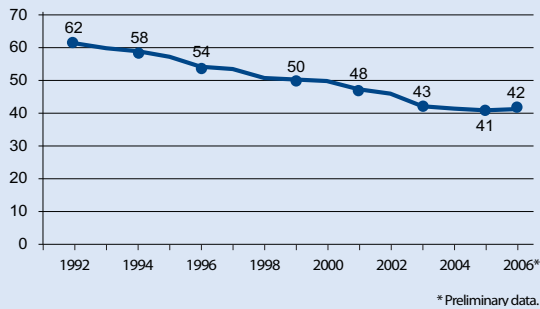
It is easy to observe that the number of teen births changed from 414,593 in 2005, to 435,427 in 2006; an increase of roughly 20,000 teen births or 5%.<sup>1</sup> However, only part of this growth reflects an increase in the likelihood that a teen will have a birth—the rest simply reflects the fact that the population is growing, and there are more teenagers this year than the year before. Similarly, it is easy to observe that the number of births to non-Hispanic white teens in 2006 was 169,837, compared to 145,651 for Hispanic teens; a difference of 24,186 teen births or 14%.<sup>1</sup> However, much of this difference is simply due to the fact that a larger number of teens are non-Hispanic white as compared to Hispanic. This comparison tells us nothing about which group of teens is at greater risk for a pregnancy.

For this reason, rates are a better statistic to compare across populations or over time. Because rates are measured per 1,000 people in the population of interest, they provide a measure of risk of a particular event within that population, and they are not influenced by population growth. The teen birth rate increased from 40.5 to 41.9 births per 1,000 girls age 15–19 between 2005 and 2006. This is an increase of 1.4 percentage points, or, relative to the rate in 2005, an increase of 3% in the likelihood that a teen will give birth that year.<sup>1</sup> Similarly, in 2006 the birth rate was 26.6 births per 1,000 non-Hispanic white teen girls compared to 83.0 births per 1,000 Hispanic teen girls, indicating a higher risk of teen births among Hispanic teens as compared to non-Hispanic white teens.<sup>1</sup>

Graphs are a helpful way to present teen pregnancy and birth rates, especially when multiple years of data are presented.

Figure 4 presents the teen birth rate for teens age 15–19 from

**FIGURE 4.** Birth Rate for Teen Girls Age 15–19



1991 through 2006. Between 1991 and 2006, the teen birth rate decreased 32% (from a peak of 62 per 1,000 girls in 1991 to 42 per 1,000 girls in 2006).<sup>1</sup>

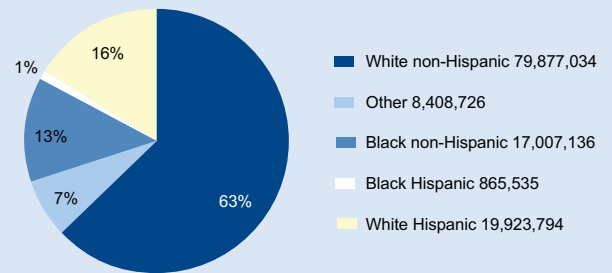
Rates cannot, however, be added or subtracted across populations. For example, one cannot simply add the birth rate for younger teens to the birth rate for older teens, or add the birth rate for Hispanic teens to the birth rate for non-Hispanic teens, to calculate the birth rate for all teens. Nor can the birth rate for teens and the birth rate for adults be added together to calculate the total birth rate. This is because rates are fractions, with the relevant population for each rate as the denominator, and cannot be added or subtracted if their denominators are different.

Proportions can also be compared over time or across populations. For example, the proportion of all pregnancies that were unplanned was relatively similar for 1994 and 2001 (48% and 49% respectively), and the proportion of pregnancies that are unplanned for teens is much higher than the proportion of pregnancies that are unplanned among 20-somethings in 2001 (82% and 71%).<sup>4</sup> Proportions can be added together if they are “slices of the same pie.” For example, one can add the proportion of total pregnancies that are unwanted and the proportion of total pregnancies that are mistimed to get the proportion of total pregnancies that are unplanned. Similarly, one could add the proportion of births that are to 15–17 year olds and the proportion of births that are to 18–19 year olds to get the proportion of total births that are to 15–19 year olds.

### Demographic Groups of Interest

The outcomes and statistics detailed above are typically reported for the population overall, and for particular demographic groups. Demographics refer to personal characteristics, such as age, race, marital status, and education and are the categories by which birth and pregnancy data are often portrayed. Some demographic measures, such as race, are constant, while others,

**FIGURE 5.** Population Age 15 to 44 by Race and Ethnicity, United States 2005



such as age, marital status, and education can change over time. Demographic characteristics are also referred to as socio-demographic characteristics.

**Race**, as defined by the Office of Management and Budget (OMB) in 1977 through the issuance of race and ethnicity standards for all federal statistics and administrative reporting, initially included three categories: American Indian or Alaska Native, Black, and White. In 1997 the standards were changed to include: American Indian or Alaska Native, Asian, Black or African-American, Native Hawaiian or Other Pacific Islander, and White.<sup>13</sup> Under current standards for race, respondents are able to identify themselves as belonging to more than one racial group, and data collection instruments such as the NSFG and vital statistics follow this standard.

**Ethnicity** is defined by OMB as a person’s national origin, referring to social groups who share a cultural heritage with a common language, values, religion, customs and attitudes. In 1977 when OMB issued race and ethnicity standards for all federal statistics and administrative agencies, two ethnicity categories were established—Hispanic origin and Not of Hispanic origin. Readers should note that ethnicity information was not collected on United States birth certificates until changes were made in 1990. As a result, pregnancy and birth statistics are not available separately for Hispanic women before 1990.<sup>13</sup>

While race and ethnicity are sometimes conflated, they are two distinct dimensions used to characterize the population. Among those identifying themselves as White, roughly one-fifth also identify as being of Hispanic ethnicity, while four-fifths identify as being non-Hispanic. In turn, of those identifying as Hispanic, the vast majority also report being White (see Figure 5). Often, results reported by racial and ethnic breakouts include the following groups: White non-Hispanic, Black non-Hispanic, other, and Hispanic.<sup>11</sup>

**Marital Status** is generally classified into four major categories: never married, married, widowed, and divorced.<sup>14</sup> The U.S. Census collects data on marital status and living arrangements annually in the March Current Population Survey. Detailed data for states and some cities are limited, but are collected in detail for the decennial census. In general, the married category includes those people who are separated from their spouses as well. Unmarried includes those who have never married as well as those who are widowed or divorced. Note that Vital Statistics data report only whether the mother was married or unmarried at the time of the child's birth.

**Cohabitation** is defined as living together without being married. NSFG determines cohabitation status by asking respondents if they are not married but living with a partner of the opposite gender.<sup>15</sup> Vital statistics data do not report measures of cohabitation.

**Income** is often reported in comparison to the Federal Poverty Threshold (e.g. 100%, 100–199%, and 200% above poverty). The Federal Poverty Threshold is based on the Federal Poverty Income Guidelines which are released annually, and are based on family size.<sup>16</sup> While data from the NSFG and from abortion patient surveys are broken out by income levels, vital statistics data are not.

Other general demographic characteristics that are available in most data include age, education, and to varying degrees, age or other demographics of the male partner.

## Data Sources

Key data on teen and unplanned pregnancy and births are from a variety of sources. Some are collected annually, some less frequently. Most data are based on surveys. That is, they rely on interview responses from a representative sample of the population. Vital statistics data are the main exception—these data are based on a near universal reporting of every birth occurring in the United States.

The lag time before data become available varies considerably. Vital statistics data on births are usually released within the following calendar year. For example, 2006 preliminary birth data were released before the end of 2007. Abortion data, and therefore pregnancy data, take much longer. As of 2008, the most recent abortion data available are for 2004. Statistics portrayed in this *Science Says* primarily reflect the most recent year for which *final* data are available, which is through 2005 for birth data, through 2004 for teen pregnancy data, and through 2001 for pregnancy intention. Statistics portrayed on our website reflect preliminary birth data as well, and currently extend through 2006.

## What It All Means

Clearly understanding key terms is critical for interpreting and describing findings related to teen and unplanned pregnancy and childbearing. It eliminates the misuse of terms and avoids confusion in reporting on published findings. The numbers, rates and proportions related to births and pregnancies each tell an important but different story.

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## About the Putting What Works to Work Project

Putting What Works to Work (PWWTW) is a project of the National Campaign to Prevent Teen and Unplanned Pregnancy funded, in part, by the Centers for Disease Control and prevention. Through PWWTW, the National Campaign is translating research on teen pregnancy prevention and related issues into user-friendly materials for practitioners, policymakers, and advocates. As part of this initiative, the *Science Says* series summarizes recent research in short, easy-to-understand briefs.

## About The National Campaign to Prevent Teen and Unplanned Pregnancy

The National Campaign to Prevent Teen and Unplanned Pregnancy is a nonprofit, nonpartisan organization supported largely by private donations. The National Campaign's mission is to improve the lives and future prospects of children and families and, in particular, to help ensure that children are born into stable, two-parent families who are committed to and ready for the demanding task of raising the next generation. Our specific strategy is to prevent teen pregnancy and unplanned pregnancy among single, young adults. We support a combination of responsible values and behavior by both men and women and responsible policies in both the public and private sectors.

## Funding Information

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